

## SPAWNING OF THE LEAST CHUB (*IOTICHTHYS PHLEGETHONTIS*)

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**ABSTRACT.**— The least chub, *Iotichthys phlegethontis* (Cope), a relict fish in Utah, spawned successfully under laboratory conditions.

The least chub, *Iotichthys phlegethontis* (Cope), is a small (ca 5 cm) relict fish (Hubbs and Miller 1948) found only in a few localities in the western desert region of Utah. In 1973 the Utah Division of Wildlife Resources classified this species as endangered. There is little literature on *I. phlegethontis* (Crawford 1979, Hubbs and Miller 1948, Pendleton and Smart 1954, Sigler and Miller 1963), and there are no reports of this species spawning under artificial light in closed-system aquaria.

On 26 May 1979, I obtained five male and five female least chub from an open raceway at the Utah Division of Wildlife Resources facility, Logan, Utah. The fish had originally been collected from Leland Harris Spring and the associated marsh between May 1977 and February 1978 by Crawford (1979). I placed the fish in a 61 × 41 × 31 cm (72.5 liter) aquarium with commercial aquarium gravel placed over a subgravel filter to a depth of about 5 cm. The water was constantly aerated and the tank was densely planted with simulated, broad-leafed plants. The fish were fed a mix of TetraMin<sup>®</sup> Staple Food and Tetra Krillflakes<sup>®</sup> at 0630 and frozen San Francisco Bay Brand<sup>®</sup> brine shrimp at 1630 each day.

Once each week, for a two-hour period, the water was filtered through a Vortex Diatom<sup>®</sup> filter. Also once each week, 15 percent of the aquarium water was drawn off and replaced with an equal amount of aged tap water. One ounce of Instead Ocean<sup>®</sup> marine salt mix in solution was added each week.

On 15 October 1979, I added two 29 cm long strips of Living World<sup>®</sup> spawning grass

to the aquarium. This spawning medium was examined daily, and on 26 October one length of the medium contained five mildly adhesive eggs. This piece of medium was removed from the aquarium and placed in a 3.6 liter glass jar containing water from the aquarium. The water in the jar was mildly agitated with air. On 27 October one and on 28 October three additional eggs were removed from the aquarium to the jar. The water in the jar was maintained at the same temperature as that in the aquarium.

Free swimming larvae were first noted on 31 October, and by 2 November all nine eggs had hatched. The larvae were able to adhere to glass and plastic. The mechanism of attachment was not studied.

The following conditions existed at the time of spawning. During the 10 days prior to the day of last-noted egg deposition, the water temperature ranged from 17.7 to 18.8 C and averaged 18.2 C. The photoperiod was 14 hours of daylight and 10 hours of darkness. Water conditions were: pH 7.6, total alkalinity 84.1, total hardness 186, Cl<sup>-</sup> 683, Ca 48.4, an Mg 45.1. Due to an equipment malfunction, dissolved oxygen was not measured.

Two additional spawnings took place on 5 November 1979 and 8 November 1979. Fifteen eggs were gathered from the former and eight eggs from the latter spawning. In addition, several other spawnings from these fish occurred from which the eggs were not taken.

From the above, it appears that *I. phlegethontis* is amenable to culture in closed-system aquaria under artificial light.

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